Name: _____   Date: _____
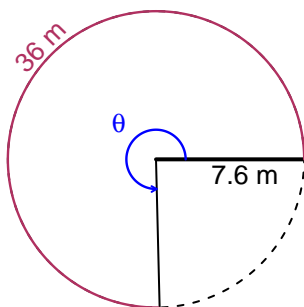
Trig Final (TEST v631)

- You can use a calculator (like Desmos)
- You should have a unit-circle with special angles and coordinates marked.

Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 36 meters. The radius is 7.6 meters. What is the angle measure in radians?
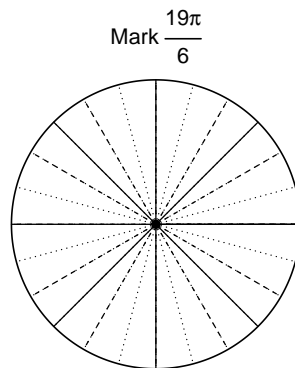

Question 2

Consider angles $\frac{-13\pi}{4}$ and $\frac{19\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{-13\pi}{4}\right)$ and $\cos\left(\frac{19\pi}{6}\right)$ by using a unit circle (provided separately).

Mark $\dfrac{-13\pi}{4}$

Find sin(−13π/4)

Mark $\dfrac{19\pi}{6}$
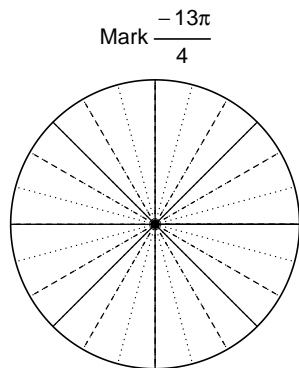
Find cos(19π/6)

Question 3

If $\tan(\theta) = \frac{-80}{39}$, and θ is in quadrant II, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = 7.58$ meters, a frequency of 5.76 Hz, and an amplitude of 3.38 meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).